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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,708	07/19/2007	Masami Nakamoto	063013	3149

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EXAMINER	
NGUYEN, KHANH TUAN	

ART UNIT	PAPER NUMBER
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,708	NAKAMOTO ET AL.	
	Examiner	Art Unit	
	Khanh T. Nguyen	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-10 are current pending in the instant application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicant benefits Foreign Priority date of application filed on 03/09/2004.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 09/06/2006 and 12/05/2006 have been initialed by Examiner.

Drawings

4. The drawing(s) submitted on 09/06/2006 has been considered by Examiner.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-4, 9, and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 and 13 of copending Application No. 10/522,941. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications are directed towards a metal nanoparticle and a method for manufacturing a metal nanoparticle having a mean particle diameter of 20 nm or less by heat treating a metal salt material in the presence of an amine compound under inert gas atmosphere.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-6, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by English Translated of Nakamoto (JP Pub. 2001-192712 hereinafter, "Nakamoto").

With respect to claims 1-6, 9, and 10, Nakamoto teaches a method for producing a metallic ultra-fine particle having an average particle diameter of 50 nm or less [0041] by teat-treating in the presence of a quaternary ammonium salt type complex compound represented by the general formula $_x[R^1R^2R^3R^4N][M_y(A)_z]$, wherein R^1 to R^4 are the same or different and each is independently hydrocarbon group which have one or more substituent groups [0010-0011]; M is a transitional metal (including noble metal) selected from Au, Pt, Cu, Ni, Pd and thereof [0014, 0024, and 0039]; A is a thiorate ligand (SR') or a thio acetylene ligand (SC**CR') wherein R' is alkyl group of C_1-C_{20} [0026]; (x) is an integer larger than zero; (y) is an integer larger than zero; and (z) is an integer larger than zero (Abstract). Nakamoto further teaches the metallic ultra-fine particle further comprising at least one type of a nitrogen containing organic component such as $[C_{12}H_{25}(CH_3)_3N]$, $[C_{14}H_{29}(CH_3)_3N]$, $[(C_{18}H_{37})_2(CH_3)_2N]$, and $[C_6H_{13}(CH_3)_3N]$ [0022] and a sulfur containing organic component (e.g. thiorate ligand or a thio acetylene ligand) [0026]. Nakamoto also teaches it desirable to heat-treat so that the content of metal component in said ultra-fine particle ranges between 80-95 weight percent (i.e. 60 weight percent or more) [0016, 0018, and 0034]. Nakamoto further teaches the heat-treatment temperature ranges from 160-190 degrees C for 6-9 hours in an inert nitrogen gas atmosphere (i.e. inactive gas atmosphere) [0035 and 0053-0060]. The disclosure is considered readable the claimed limitation of a heating

temperature is in a temperature region (i.e. range) that the weight lose loss percent is 1 to 50 %.

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretation. The reference is anticipatory.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over English Translated of Nagasawa et al. (JP Pub. 2001-131603 hereinafter, "Nagasawa") in view of Iri et al. (U.S Pat. 5,272,223 hereinafter, "Iri").

Nagasawa teaches a composite metallic superfine grain having a core metal selected from noble metal such as Cu, Au, Pt, Pd or the like [0012]. The said core metal having a mean particle diameter from 1-20 nm, preferably 1-10 nm [0011], and the content of said noble metal ranges between 50-90 weight percent [0017]. Nagasawa further teaches the said core metal is protected by an organic film substance [0007-0008] such as a fatty acid with a carbon number of 5 or more, alkylbenzene sulfonic acid, or alkyl sulfonic acid (sulfur containing organic compound) [0013].

The differences between the instant claimed invention and Nagasawa reference is that Nagasawa failed to suggest the said metallic superfine particle further comprising at least one type of a nitrogen containing organic component.

In an analogous art, Iri teaches a metal particle such as Cu, Al, Zn or brass can be surface treated with fatty acid, aliphatic amine and aliphatic amide to exhibits excellent storage stability and coating performance equal or superior to a solvent type paint even if the composition is applied as a pigment component to an aqueous paint with a pH in a strongly acidic or basic range (Col. 2, lines 53-59, Col. 3, lines 21-23 and Col. 3, lines 47-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the metal nanoparticle formula of Nagasawa by further surface treating Nagasawa's metal particle with a nitrogen containing organic component such as aliphatic amine and aliphatic amide as suggested by Iri in order to provide excellent storage stability and coating performance.

11. Claims 7and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over English Translated of Nagasawa et al. (JP Pub. 2001-131603).

Nagasawa is relied upon as set forth above. With respect to instant claims 7 and 8, although Nagasawa does not explicitly suggest the quaternary ammonium salt type metal complex compound and the aliphatic amine having a mole ratio of 1:1 to 3:1.

Nonetheless, it would have been to one of ordinary skill to optimize the mole ratio of the quaternary ammonium salt type metal complex compound and the aliphatic

amine of Nagasawa through routine experimentation for best results (i.e. mole ratio of 1:1 to 3:1). As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the prima *facie* case of obviousness. See In re *Boesch, 617* F.2d 272,276,205 USPQ 215,219 (CCPA 1980). See also *In re Woodrufl* 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. *Cir.* 1990), and *In re Aller,* 220 F2d 454,456,105 USPQ 233,235 (CCPA 1955).

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh T. Nguyen whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KTN
01/01/2008

Mark Kopec
Primary Examiner